Delta Operations for Salmonids and Sturgeon (DOSS) Group
Conference call: 6/4/13 at 9:00 a.m.

Objective: Provide advice to the Water Operations Management Team (WOMT) and National Marine Fisheries Service (NMFS) on measures to reduce adverse effects from Delta operations of the Central Valley Project and the State Water Project on salmonids and green sturgeon. DOSS will work with other technical teams. DOSS notes and advice can be found at: http://www.swr.noaa.gov/ocap/doss.htm.

DWR: Mike Ford, Edmund Yu, Kevin Reece, Andy Chu, Dan Yamanaka, Tracy Pettit, Reza Shacheragi
FWS: Craig Anderson, Roger Guinee, Leigh Bartoo
NMFS: Barbara Rocco, Jeff Stuart, Barb Byrne, Garwin Yip
Reclamation: Russ Yaworsky
DFW: Krystal Acierto, Colin Purdy, Bob Fujimura
EPA: Erin Foresman
SWRCB, USGS: not present

Agenda

1. Fish monitoring
2. Current operations
3. RPA implementation update
4. DOSS advice
5. Summer schedule

Items of interest (notices were sent to DOSS):

- **Delta conditions meeting:** We will have a conference call/WebEx meeting at 10:15 this morning to review how "Delta status" (*e.g.*, balanced vs. excess conditions) is determined. All are welcome to join by phone or at the NMFS office.

- **Delta Juvenile Fish Monitoring Program (DJFMP) review:** Today is the first day of a 2-day review of DJFMP. The event is being held in the second floor conference room at 980 9th Street, Sacramento.

- **HEC-5Q:** The San Joaquin River Basin-wide Water Operations and Temperature Model that simulates reservoir storage, river flow, and water temperature meeting will be held in the Coastal Hearing Room at 1001 I Street, Sacramento (the EPA building) on 6/7 from 10:00 a.m. to 1:00 p.m.

- **SALSIM Version 2 Update:** New web-based salmon simulator for fall-run Chinook in the San Joaquin River and its tributaries. Meeting will be held in the Byron Sher Auditorium on 6/11 from 10:00 a.m. to 1:00 p.m. at 1001 I Street, Sacramento (the EPA building).

One DOSS participant mentioned that he had attended a recent discussion regarding how to ensure that the San Joaquin restoration program (which includes reintroduction of spring-run Chinook salmon as an experimental population) will have only "de minimis" impacts on water supply, as required in the settlement agreement. If DOSS participants are interested in learning more about this, NMFS can set up a brown-bag discussion. Please send an email to Byrne (NMFS) if interested.

Fish Monitoring: The following table presents fish monitoring data. Unless otherwise noted, reported sizes are fork length. See also: http://www.water.ca.gov/swp/operationscontrol/calfed/calfedmonitoring.cfm.

Location	Chipps Is. Midwater Trawl	Sacramento Trawls	Mossdale Kodiak Trawl	Glenn-Colusa ID RST	Tisdale RST	Beach Seines
Sample Date	5/28, 29, 31	5/28, 31	5/29–6/1	5/27–6/3	N/A	5/28–5/31
Total Catch	**354**	**12**	**32**	**918**		**519**
FR	258	11	32	644		47
WR						
SR	1					
LFR						
Ad-Clipped Chinook	91			270		
DS						84
Splittail	2					388
Longfin	2 (35 & 37 mm)					
SH (ad-clip)						
SH (wild)		1		4		
W. Temp. (avg. °F)	65.7	67.7		60.3		69.4
Flows (avg. cfs)						
Turbidity (avg. NTU)	34.8	12.8		2.25		21.7
WR/LFR Avg. CPUE						

CPUE = catch per unit of effort; ACT = acoustic tag

Glenn–Colusa: No sturgeon were caught in the RSTs this past week.

Mossdale: There have been 5,174 Chinook caught in the Mossdale trawl sampling since 4/2. The catch numbers are now decreasing; the peak catches during April and May appear to be associated with both the increase in flows in mid-April and the decrease in flows in mid-May.

Fish Salvage: Geir Aasen (DFW) provided the fish salvage report covering 5/27/13 through 6/2/13 and emailed it to DOSS participants. This report is posted at ftp://ftp.delta.dfg.ca.gov/salvage and you can locate the table under folder "DOSS salvage tables" (also try http://www.dfg.ca.gov/delta/apps/salvage/Default.aspx and click on "salvage FTP site").

DFW (Fujimura) report for 5/27–6/2

The number of salvaged steelhead decreased last week. There were 28 non-ad-clipped steelhead salvaged last week compared to 32 total salvaged the previous week. Steelhead losses were greater this week. The estimated daily loss densities of non-ad-clipped steelhead ranged from 1.76 to 7.64 fish/TAF on the days that steelhead were observed. The season total of salvaged non-ad-clipped steelhead is 785.

No non-ad-clipped older juvenile Chinook salmon were salvaged last week. The salvage numbers of non-ad-clipped juvenile Chinook for fall-run-sized fish continued to decrease. There were 107 non-ad-clipped juvenile Chinook salmon salvaged during the reporting period and all were fall-run sized. No ad-clipped Chinook were salvaged last week.

No sturgeon was salvaged during the reporting period.

Report on preliminary salvage estimates for 6/3/13

The preliminary salvage results for 6/3 show no juvenile salmon or sturgeon at either fish facility. Four non-ad-clipped steelhead and an increased number of delta smelt were salvaged at SWP. The preliminary steelhead loss density is 3.81 fish/TAF. During this discussion of Monday's loss-density estimate, it was noted that on Saturday, 6/1, the steelhead loss trigger in Action IV.2.3 was nearly met; however, it was not tripped and no changes to operations were warranted.

The 2 steelhead salvaged on Saturday, 6/1, were 346 and 398 mm (fork length)—~ 0.5–0.75 mm (~2–3 inches) larger than those typically caught this time of year. When asked to speculate about what the larger-than-average size might suggest about the origins of those steelhead, NMFS noted that although we are still seeing juvenile steelhead reported in the Mokelumne River in the fish bypass traps, none have been reported in the Mossdale trawls for the past 2 weeks. We are not able to determine from where these larger fish are coming.

Compiled by Bob Fujimura on June 3, 2013

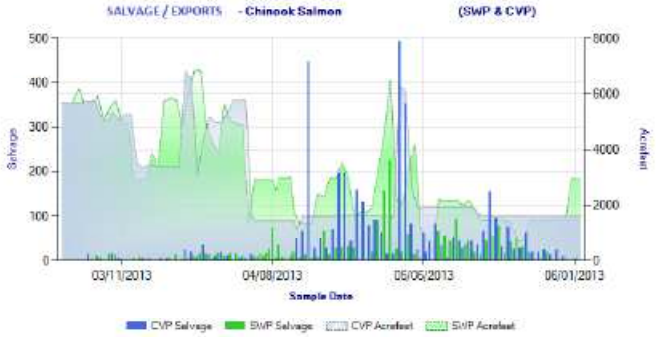


Figure 1. Daily salvage of Chinook salmon (all races) and water exports from the state and federal fish salvage facilities during March 1 through June 2, 2013. Graph obtained from the DFG salvage monitoring web-page: http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx.

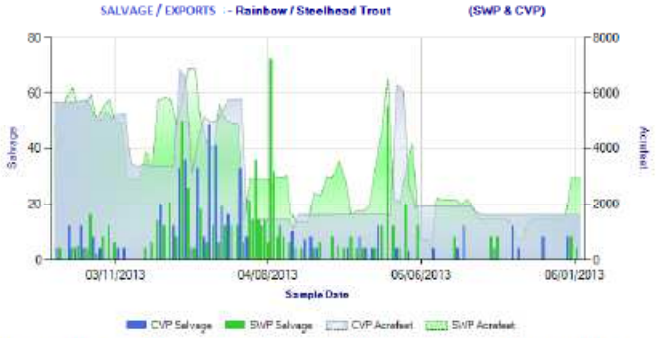


Figure 2. Daily salvage of steelhead and water exports from the state and federal fish salvage facilities during March 1 through June 2, 2013. Graph obtained from the DFG salvage monitoring web-page: http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx

DOSS Weekly Salvage Update
Reporting Period: May 27-June 2, 2013
Prepared by Bob Fujimura on June 3, 2013 1900
Preliminary Results -Subject to Revision

Criteria	27-May	28-May	29-May	30-May	31-May	1-Jun	2-Jun	Trend	
Loss Densities									
Wild older juvenile CS	0	0	0	0	0	0	0	→	0.0
Wild steelhead	1.76	0	0	0	1.77	7.64	3.81	↗	2.1
Exports									
SWP daily export	1,472	1,472	1,472	1,472	1,472	2,937	2,937	↗	1,891
CVP daily export	1,612	1,608	1,608	1,606	1,601	1,599	1,604	→	1,605

Loss Density = fish lost/TAF; water export = AF; Trend = compared to previous week; wild = adipose fin present
Loss = estimated number of fish lost at the CVP and SWP Delta export facilities based on estimated salvage (see below)

Chinook Salmon Weekly*/Season Salvage and Loss
Combined salvage and loss for both CVP and SWP fish facilities
Race determined by size at date of capture; hatchery = adipose fin missing;

		Weekly Total			Season Total	
Category		Salvage	Loss	Trend	Salvage	Loss
Wild						
	Winter Run	0	0	→	271	731
	Spring Run	0	0	↘	909	2,496
	Late Fall Run	0	0	→	85	277
	Fall Run	107	234	↘	4,553	8,701
	Unclassified	0	0	→	8	5
	Total	**107**	**234**		**5,826**	**12,210**
Hatchery						
	Winter Run	0	0	→	187	595
	Spring Run	0	0	→	7	15
	Late Fall Run	0	0	→	781	2,898
	Fall Run	0	0	→	415	1,522
	Unclassified	0	0	→	0	0
	Total	**0**	**0**		**1,390**	**5,030**

Trend = weekly loss per race; Salvage = estimated number of fish collected by the CVP and SWP fish protective facilities per unit of time

Steelhead Weekly/Season Salvage and Loss
Combined salvage and loss for both CVP and SWP fish facilities

	Weekly Total			Season Total	
Category	Salvage	Loss	Trend	Salvage	Loss
Wild	28	63	↗	785	2,211
Hatchery	0	0	→	701	1,882
Total	**28**	**63**		**1,486**	**4,093**

State Water Project loss = salvage x 4.33; Central Valley Project loss = salvage x 0.66

Hatchery Coded-Wire-Tag (CWT) Results (as of 6/2/13, see table below): No CWT Chinook have been collected at the fish facilities since 5/4/13.

CONFIRMED HATCHERY (ADIPOSE FIN CLIPPED) CHINOOK SALMON LOSS AT THE SWP & CVP DELTA FISH FACILITIES, 2012/2013

Release Date	CWT Race	Hatchery	Release Site	Release Type	Confirmed Loss	Number Released[1]	Total Entering Delta	% Loss of Number Released[2]	% Loss of Total Entering Delta[3]	First Concern Level	Second Concern Level	Date of First Loss[4]	Date of Last Loss[4]
11/5/2012	F	Mokelumne River Hatchery	Mokelumne River	**	599.45	100,633	n/a	0.596	n/a	n/a	n/a	12/5/2012	4/8/2013
11/28/2012	LF	Coleman NFH	Battle Creek	Production	4100.48	900,642	n/a	0.008	n/a	n/a	n/a	12/8/2012	4/21/2013
12/18/2012	LF	Coleman NFH	Battle Creek	Spring Surrogate	74.95	72,974	n/a	0.103	n/a	0.5%	1.0%	12/31/2012	3/23/2013
1/8/2013	LF	Coleman NFH	Battle Creek	Spring Surrogate	138.70	79,000	n/a	0.176	n/a	0.5%	1.0%	1/20/2013	3/27/2013
1/25/2013	LF	Coleman NFH	Battle Creek	Spring Surrogate	24.40	85,600	n/a	0.029	n/a	0.5%	1.0%	2/3/2013	3/31/2013
2/7/2013	W	Livingston Stone NFH	Caldwell Park	Production	8.59	182,662	86,525	0.005	0.009	0.5%	1.0%	3/25/2013	3/25/2013
4/8 to 4/18/2013	S	Feather River Hatchery	Boyd's Pump	**	4.33	1,004,151	n/a	0.0004	n/a	n/a	n/a	4/30/2013	5/3/2013
4/10 to 4/11/2013	F	Coleman NFH	Battle Creek	Production	2.33	1,583,900	n/a	0.0001	n/a	n/a	n/a	5/2/2013	5/4/2013
4/17 to 4/19/2013	F	Mokelumne River Hatchery	Sherman Island Rd	**	0.00	112,447	n/a	0.000	n/a	n/a	n/a	5/4/2013	5/4/2013

UNCONFIRMED HATCHERY (ADIPOSE FIN CLIPPED) CHINOOK SALMON LOSS AT THE SWP & CVP DELTA FISH FACILITIES, 2012/2013

Facility	Unknown CWT Loss[5]	Unread CWT Loss[6]	Unknown Hatchery Loss[7]	Acoustic Tag Loss[8]	Number of Unassigned CWTs[9]
SWP	53.58	0.00	0.00	17.03	1
CVP	5.20	0.00	0.00	0.00	0
TOTAL	**58.78**	**0.00**	**0.00**	**17.03**	**1**

SWP and CVP adipose fin clipped Chinook lost from 10/1/2012 through 6/2/2013.
[1]Number released with the adipose fin clipped and a coded-wire tag (CWT).
[2]% Loss of Number Released = (Confirmed Loss/Number Released)*100.
[3]% Loss of Total Entering Delta= (Confirmed Loss/Total Entering Delta)*100.
[4]Date of first and last loss accounts for all CWT loss even those from special studies where salvage and loss=0.
[5]Adipose fin clipped Chinook was observed during fish count, but tag code could not be determined (e.g., damaged tag, lost tag, no tag, or Chinook accidentally released).
[6]Adipose fin clipped Chinook was collected during fish count and has not been processed yet.
[7]CWT has been read, but hatchery release information not yet available.
[8]Adipose fin clipped Chinook released due to presence of sutures.
[9]CWT cannot currently be assigned to a salvage record with certainty since the CWT was lost and then found. CWT may be assigned to a salvage record if new information is available.
**** Information not yet available.**

DWR-DES Revised 6/3/2013
Preliminary data from DFW, DWR, FWS, and Reclamation; subject to revision.

Operations (6/4/13)

SWP		CVP	
Exports (cfs)			
Clifton Court Forebay	1,000	Jones Pumping Plant	800
Reservoir Releases (cfs)			
Feather - Oroville	2,000	American - Nimbus	1,500 (will increase to 2,000 on 6/6)
		Sacramento - Keswick	12,000 (will increase to 13,000 on 6/6)
		Stanislaus - Goodwin	350 (for Ripon DO)
Reservoir Storage (in TAF, % of capacity)			
San Luis (SWP)	305	San Luis (CVP)	440
Oroville	2,785	Shasta	3,329
New Melones		Folsom	733
Delta Operations			
DCC	Closed (will reopen on 6/7 for weekend)	Sacramento River at Freeport (cfs)	10,682
Outflow Index (cfs)	7,600	San Joaquin River (cfs) at Vernalis	954
Total Delta Inflow (cfs)	12,812	OMR (daily) (cfs)	
Water Temperature (°F)		OMR 5-day avg (cfs)	-2,080
X2 (km)	81	OMR 14-day avg (cfs)	-1,935
E/I (%)	14 (3-d avg)		

Water Temperatures: Temperatures at Mossdale have been >72°F for the past 4 days. RPA Action IV.2.3 ends on 6/15 or until the average daily water temperature at Mossdale is >72°F for 7 consecutive days, whichever comes first.

Current water temperature is 74.3°F (23.5°C) at Clifton Court Forebay and could reach 77.0°F (25.0°C) this weekend with the upcoming warming trend. The current RPA action from the smelt BiOp will end 6/30 or when the daily mean water temperature at Clifton Court Forebay reaches 77.0°F (25.0°C), for 3 consecutive days, whichever comes first.

Delta Outflow Requirement and Trends in Depletions: The D-1641 X2 outflow requirement during June is 7,100 cfs (this requirement can also be satisfied by a daily or 14-day average EC of 2.64 mS/cm at or west of Collinsville). Depletions in the Sacramento basin and delta are not likely to drop until July or August. Given the warm weather expected in the coming week, it is expected (as indicated during the operations update) that reservoir releases will increase to meet the outflow requirement.

RPA Implementation Update:
Action IV.2.3 (OMR management): The OMR limit in effect is that OMR be no more negative than -5,000 cfs

RPA Action IV.2.3 ends on 6/15 or until the average daily water temperature at Mossdale is >72.0°F for 7 consecutive days, whichever comes first.

Action IV.2.1 (I:E ratio): The last day of implementation of the 1:1 I:E ratio (critical year I:E requirement) was 5/31.

Smelt Working Group (SWG): SWG agreed that given their present distribution, current salvage, and Delta conditions, the risk of entrainment of delta smelt remains low; therefore, SWG recommends that no change in operations is necessary to adequately protect delta smelt and longfin smelt from entrainment. SWG will continue to monitor smelt salvage, larval, and juvenile smelt survey data, and Delta hydrological conditions and will reconvene on 6/10, at 10:00 a.m. Although a large number of delta smelt were salvaged over the weekend, SWG does not see the need to change the recommendation from the previous week. Some members stated that when southern Delta water temperatures reach the 23.0-to-25.0°C range, we can expect an initial salvage event, followed by much smaller levels of salvage until lethal water temperatures are reached for the southern Delta. Members posited that this initial surge of salvage might be the result of the remaining south-Delta delta smelt attempting to move downstream to their summer habitat in response to the recent upswing in water temperatures. On 6/3, the preliminary daily salvage was 176, mostly at SWP. There were 332 young-of-the-year delta smelt of salvageable size ≥20 mm) observed at the CVP and SWP fish facilities for of 5/27 through 6/2 (SWP = 324; CVP = 8). The total salvage of juvenile delta smelt ≥20 mm is approaching 60% of the annual take limit. The temporal off ramp for Action 3 is 6/30. The temperature off ramp (as described on p. 358 of the OCAP BiOp) occurs when water temperature reaches a daily average of 25°C for 3 consecutive days at Clifton Court Forebay.

2013 Annual Review: Yip (NMFS) reports that no dates have yet been decided for the annual review workshop. Reclamation will draft the annual review timeline. The content and format will be the same as in previous years (such as with Clear Creek last year). Management from the federal agencies (NMFS, Reclamation, FWS) and all of the technical teams will be asked to suggest issues that should be presented to and/or reviewed by the independent review panel.

Some possible topics for the review are:

- Term and Condition 2(a): This issue **will** be part of the 2013 annual review (Israel [Reclamation] sent out an email last week about this along with a Doodle poll—those interested should respond with availability for 1–2 meetings in June).
- Monitoring: Mill & Deer creeks rotary screw trap analysis.
- Monitoring: Tisdale/Knights Landing monitoring sites.

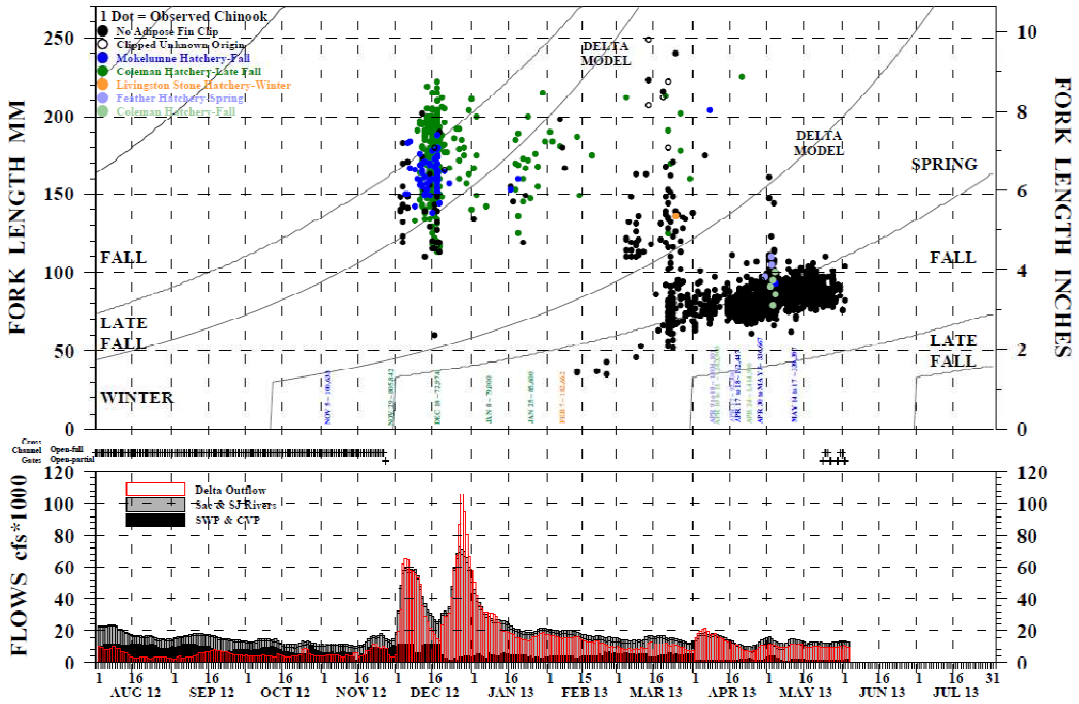
Please think about any "hot" topics for the review panel so that, if needed, we can include a write-up of the issue in the annual report. An agenda item will be added to next week's DOSS agenda to discuss this.

DOSS Advice to WOMT and NMFS: None.

Next Meeting: The next DOSS conference call is scheduled for 6/11 at 9:00 a.m. and will be our last DOSS meeting for this season. We will discuss the annual report schedule and whether we want a DOSS "check-in" call each month or DOSS subgroup check-in calls, mainly for the annual report.

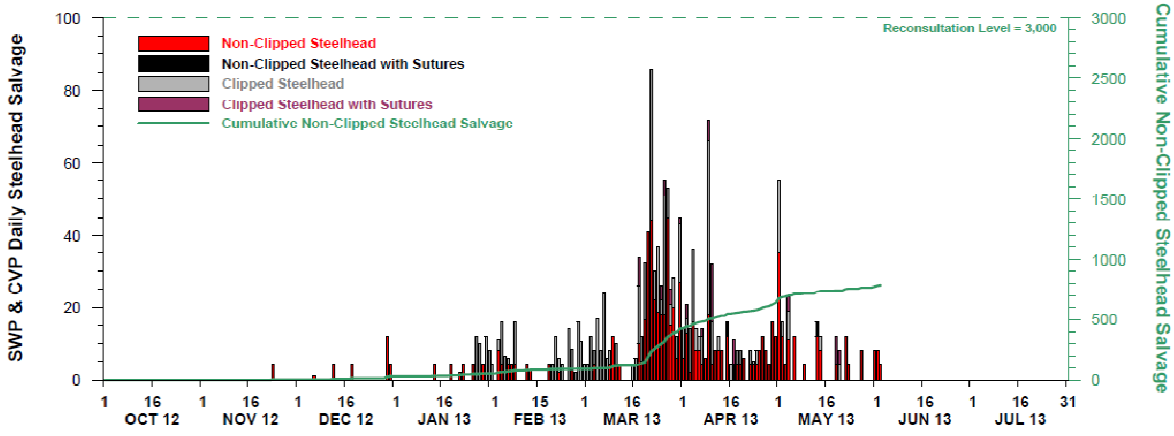
Below are graphs provided by DWR for Chinook salmon and steelhead salvaged or lost at the Delta fish facilities and observed in the Sacramento and San Joaquin rivers. For additional graphs, please visit the DWR website at: http://www.water.ca.gov/swp/operationscontrol/calfed/calfedmonitoring.cfm.

OBSERVED CHINOOK SALVAGE AT THE SWP & CVP DELTA FISH FACILITIES 08/01/2012 THROUGH 06/02/2013



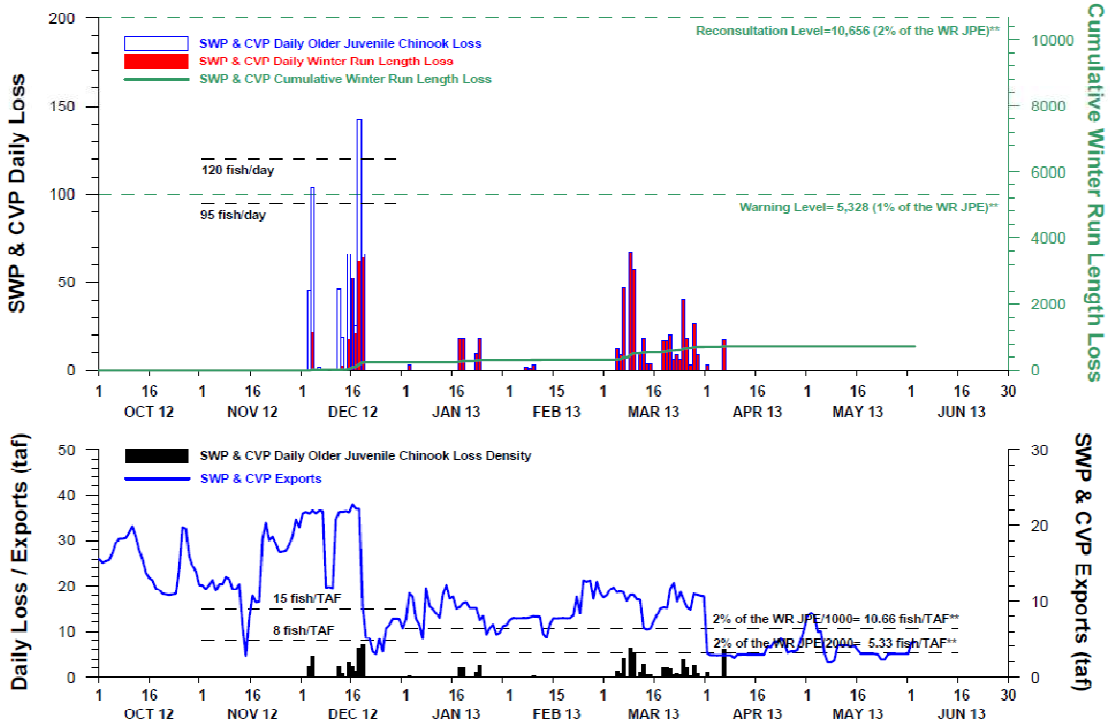
DWR-DES 03 JUN 2013
Preliminary data from DFW, DWR, FWS, Reclamation, and CDEC; subject to revision.
*Chinook outside of the length-at-date criteria (Delta model) are not reported.

STEELHEAD SALVAGE AT THE DELTA FISH FACILITIES 01 OCT 2012 THROUGH 02 JUN 2013



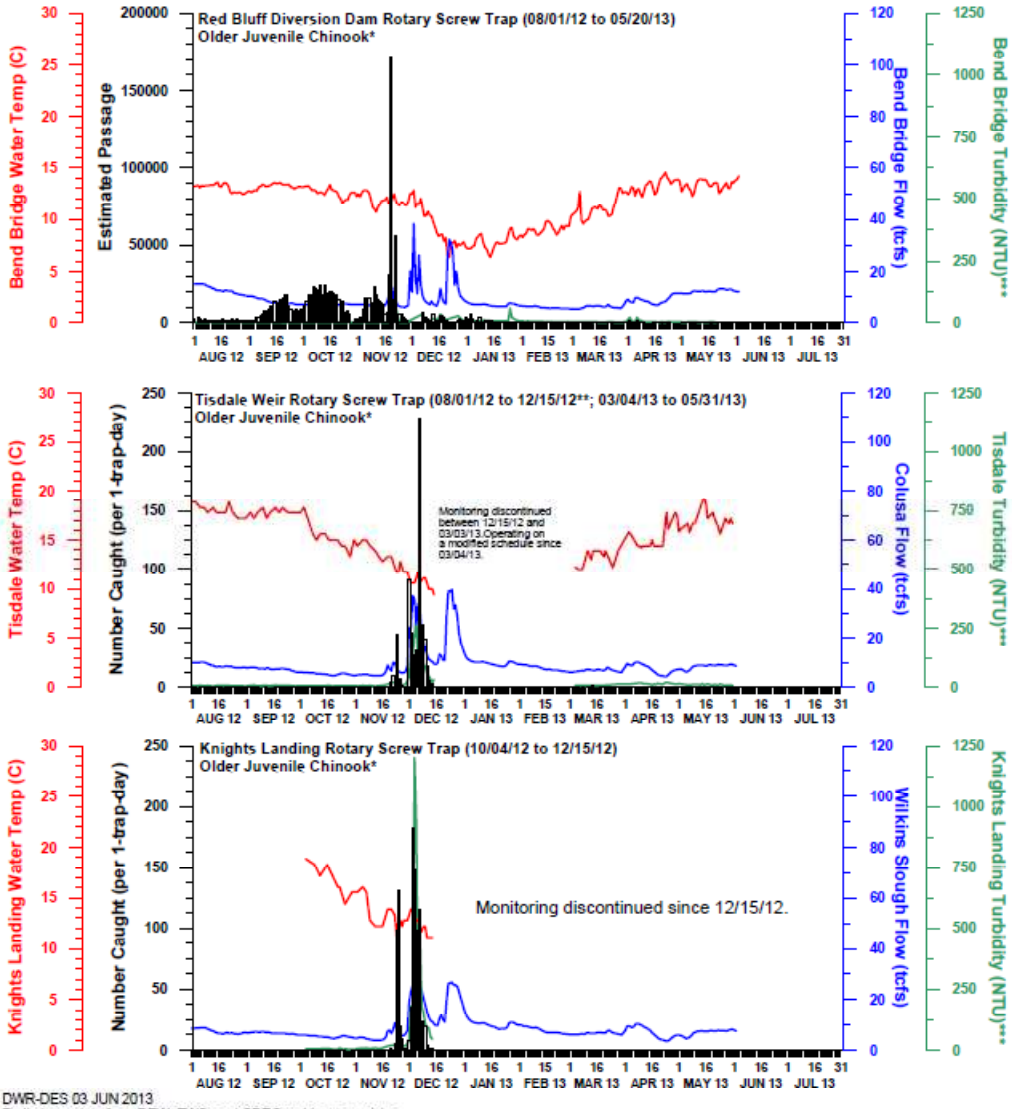
DWR-DES 03 JUN 2013
Preliminary data from DFW; subject to revision.

NON-CLIPPED WINTER RUN & OLDER JUVENILE CHINOOK LOSS AT THE DELTA FISH FACILITIES 01 OCT 2012 THROUGH 02 JUN 2013



DWR-DES 03 JUN 2013
Preliminary data from DFW; subject to revision.
*Older juvenile Chinook defined as all Chinook greater than or equal to the minimum winter run length-at-date criteria and less than the maximum size included in the length-at-date criteria (Delta model) for which a race is assigned on a given sampling date.
**Based on the final juvenile production estimate (JPE), which comes out to be about 532,609 non-clipped winter run (WR) Chinook entering the Delta during water year 2013.

NUMBER OF UNMARKED OLDER JUVENILE CHINOOK MEASURED IN THE SACRAMENTO RIVER



DWR-DES 03 JUN 2013

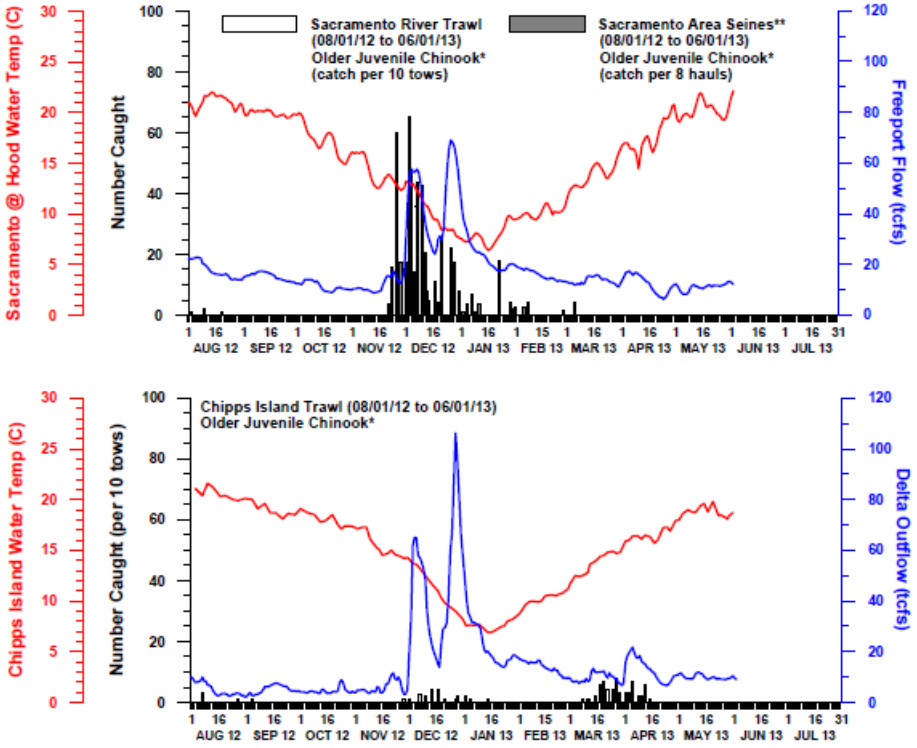
Preliminary data from DFW, FWS, and CDEC; subject to revision.

*Older juvenile Chinook defined as all Chinook greater than or equal to the minimum winter run length-at-date criteria and less than the maximum size included in the length-at-date criteria (Frank Fisher model) for which a race is assigned on a given sampling date.

** Tisdale Weir: One older juvenile caught on 9/14 and 43 older juveniles caught on 11/25. However, CPUE was not calculated due to problems with the cone clickers. As a result, data are not presented on the graph.

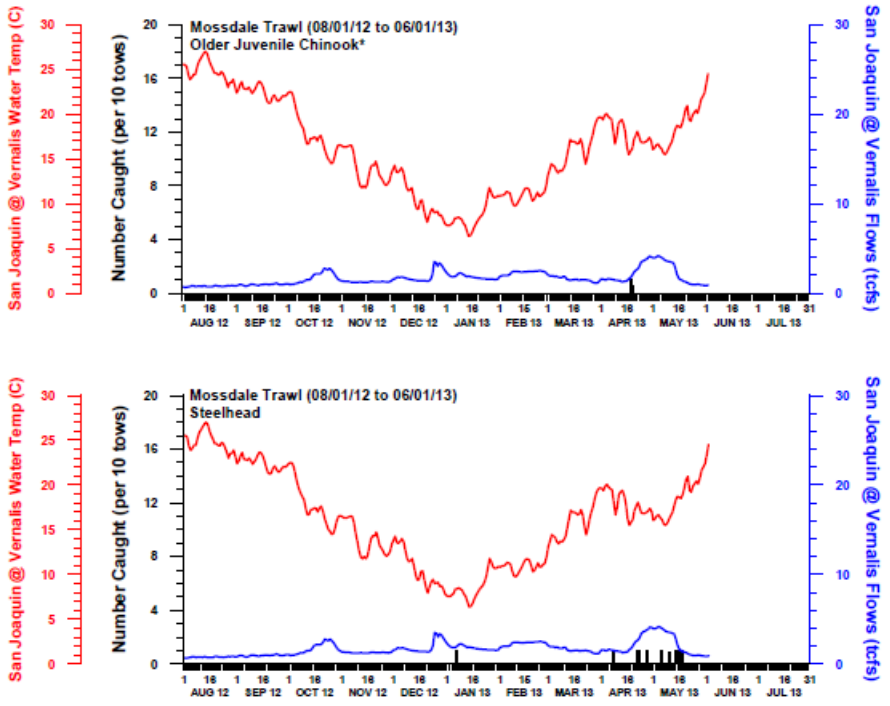
***Turbidity is a discrete measurement and is not measured continuously. Therefore, data are interpolated on days when turbidity was not measured.

NUMBER OF UNMARKED OLDER JUVENILE CHINOOK MEASURED IN THE LOWER SACRAMENTO RIVER & CHIPPS ISLAND



DWR-DES 03 JUN 2013
Preliminary data from FWS and CDEC; subject to revision.
**Older juvenile Chinook defined as all Chinook greater than or equal to the minimum winter run length-at-date criteria and less than the maximum size included in the length-at-date criteria (Frank Fisher model) for which a race is assigned on a given sampling date.
**Sacramento area seine route consists of the following seine sites: Verona, Elkhorn, Sand Cove, Discovery Park, American River, Miller Park, Sherwood Harbor, and Garcia Bend. Bars are stacked if Chinook caught from the trawl and seines are from the same day.

NUMBER OF UNMARKED OLDER JUVENILE CHINOOK AND UNMARKED STEELHEAD MEASURED IN THE SAN JOAQUIN RIVER



DWR-DES 03 JUN 2013
Preliminary data from DFW, FWS, and CDEC; subject to revision.
**Older juvenile Chinook defined as all Chinook greater than or equal to the minimum winter run length-at-date criteria and less than the maximum size included in the length-at-date criteria (Frank Fisher model) for which a race is assigned on a given sampling date.